



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/561,038  | 12/16/2005  | Katsuhito Miura      | 2005_1996A          | 3768             |
| 513 7590 09/29/2009<br>WENDEROTH, LIND & PONACK, L.L.P.<br>1030 15th Street, N.W.,<br>Suite 400 East<br>Washington, DC 20005-1503 |             |                      |                     |                  |
| EXAMINER  |             |                      |                     |                  |
| LEWIS, BEN  |             |                      |                     |                  |
| ART UNIT  |             | PAPER NUMBER         |                     |                  |
| 1795  |             |                      |                     |                  |
| MAIL DATE   |             | DELIVERY MODE        |                     |                  |
| 09/29/2009  |             | PAPER                |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/561,038

## Applicant(s)

MIURA ET AL.

## Examiner

Ben Lewis

## Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CD/CD)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**Detailed Action**

1. The Applicant's amendment filed on June 9<sup>th</sup>, 2009 was received. Claims 1-3 were amended.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action (issued on February 9<sup>th</sup>, 2009).

***Claim Rejections - 35 USC § 102***

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Miura et al. (U.S. Patent No. 6,159,389).

With respect to claim 1, Miura et al. teach disclose a polyether copolymer and crosslinked solid polymer electrolyte (title) wherein, the copolymer of Miura has a repeating unit of formula (II) (which reads on Applicant's formula (i)) and a repeating unit of the formula (III'-1) (which reads on Applicant's formula (ii) (Col 1 lines 55-67);(Col 3 lines 1-30).

Miura et al. teach that the copolymer is mixed with lithium perchlorate (electrolyte salt) (Col 13 lines 5-15).

Miura et al. teach n-hexane as an aprotic organic solvent (Col 13 lines 34-55)

Mura et al. teach that triethylene glycol dimethacrylate (additive) was added as a crosslinking agent (Col14 lines 1-16).

When a molar ratio of the crosslinking monomer component (monomer capable of forming the repeating unit (C)) is larger than 15% by mol, the ionic conductivity is drastically lowered and the flexibility is lost in case of producing a film, thereby causing problems in processability and moldability (Col 4 lines 14-20) (Examiner notes that Miura repeating unit of formula (III'-1) is a crosslinking monomer). (Examiner notes that  $R^1$  represents a substituent containing an ethylenically unsaturated group). (Col 2 lines 19-24).

With respect to claim 2, Miura et al. teach that as the ethylenically unsaturated group-containing oxirane compound there can be glycidyl acrylate and glycidyl methacrylate (Col 4 lines 55-67).

With respect to claim 3, Miura et al. teach that polyether copolymer weight-average molecular weight of  $10^4$  to  $10^7$ . (Col 4 lines 24-35).

With respect to claim 4, Miura et al. teach that as the polyether copolymer used as the raw material for the crosslinked material the (A) 4 to 40% by mol of a repeating unit derived from a monomer represented by the formula (I): (B) 95 to 59% by mol of a repeating unit derived from a monomer represented by the formula (II) (Col 3 lines 55-67).

With respect to claims 5-8, Miura et al. teach a battery comprising a positive and negative electrode and polymer solid electrolyte of (Col 12 lines 30-57).

***Response to Arguments***

4. Applicant's arguments filed on June 9<sup>th</sup>, 2009 have been fully considered but they are not persuasive.

*Applicant's principal arguments are*

(a) Miura et al. use a halogen-containing polymer, wherein halogen (chlorine) is derived from epichlorohydrin. As stated above, the polymer recited in Applicants' claims is not a halogen-containing polymer. The structure of the polymers of Applicants' claims and the Miura et al. reference are quite different. Additionally, the polymer electrolyte composition of Applicants' claims has remarkably higher ionic conductivity compared to that of Miura et al. Accordingly, the subject matter of Applicants' claims is unobvious over the teachings of Miura et al. For the reasons set forth above, it is respectfully requested that the rejection be withdrawn.

(b) Applicants respectfully traverse the rejection for the following reasons. In the polyether copolymer, Miura et al. use epichlorohydrin. On the contrary, Applicants' claims have been amended to recite "a polyether binary copolymer which has a main

chain consisting of repeating units of formula (i) and crosslinking units of formula (ii)..."  
MPEP 2111.03 states, "The transitional phrase 'consisting of' excludes any element, step, or ingredient not specified in the claim. *In re Gray*, 53 F.2d 520, 11 USPQ 255 (CCPA 1931); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948) ('consisting of' defined as 'closing the claim to the inclusion of materials other than those recited except for impurities ordinarily associated therewith.')." Thus, Applicants' recited polyether binary copolymer excludes epichlorohydrin. The omission of epichlorohydrin is not described in Miura et al., since epichlorohydrin is an essential monomer in the reference. Thus, Miura et al. fail to teach each and every limitation of Applicants' claims, as is required for anticipation.

In response to Applicant's arguments, please consider the following comments.

(a) and (b) (Examiner notes that  $R^1$  represents a substituent containing an ethylenically unsaturated group). (Col 2 lines 19-24). Examiner notes repeating unit (B) (formula II) is derived from ethylene oxide

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ben Lewis/  
Examiner, Art Unit 1795

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795